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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,095	07/31/2003	Oliver Charles Schuepbach	TI-33782	3490
23494	7590	07/06/2007	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			BAYARD, EMMANUEL	
P O BOX 655474, M/S 3999			ART UNIT	PAPER NUMBER
DALLAS, TX 75265			2611	
			NOTIFICATION DATE	DELIVERY MODE
			07/06/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com  
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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/631,095	SCHUEPBACH, OLIVER CHARLES	
Examiner	Art Unit		
Emmanuel Bayard	2611		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 24 April 2007.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-10 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-10 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892) 4)  Interview Summary (PTO-413)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. \_\_\_\_ .  
3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_ . 5)  Notice of Informal Patent Application  
6)  Other: \_\_\_\_ .

## DETAILED ACTION

This is in response to communication filed on 4/24/07 in which claims 1-10 are pending. The applicant's amendments have been fully considered but they are moot based on the new ground of rejection therefore this case is made final.

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because the abstract is too short. Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Fernando et al U.S. patent No 6,397,240 B1.

As per claims 1 and 6, Fernando teaches a circuitry for generating a sequence of probable symbols from a sequence of received symbols using Reduced State Sequence Estimation, comprising: butterfly circuitry for computing terms in butterfly structure of  $sm.sub.1'=\min\{sm.sub.1+m, sm.sub.2-m\}$  and  $sm.sub.2'=\min\{sm.sub.1-m,$

sm.sub.2+m} (see fig.9 and col.9, lines 9-21, 35—40) ; and circuitry for computing multiple path metrics between a first state and a second state calculating a best path metric at the second state using the output of said butterfly circuitry (see fig.10 and col.9, lines 23-25, 40-45).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-5 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fernando et al U.S. patent No 6,397,240 B1 in view of Eidson U.S. Pub No 20020122507 A1.

As per claims 2 and 7, Fernando et al teach all the features of the claimed invention except circuitry for rotating said received symbols by a predetermined angle.

Eidson teaches circuitry for rotating said received symbols by a predetermined angle (see page 1 paragraphs [0004] [0011]).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Eidson into Fernando et al as to reduce or eliminate phase offset with respect to the carrier as taught by Eidson (see page 1 [0011]).

As per claims 3 and 8, Fernando et al teach all the features of the claimed invention except comprising circuitry for rotating said reference constellation symbols by a predetermined angle (see page 1 paragraphs [0004] [0011]).

Eidson teaches a circuitry for rotating said reference constellation symbols by a predetermined angle (see page 1 paragraphs [0004] [0011]).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Eidson into Fernando et al as to reduce or eliminate phase offset with respect to the carrier as taught by Eidson (see page 1 [0011]).

As per claims 4 and 9, Fernando et al teach all the features of the claimed invention except wherein said predetermined angle is  $(2k+1)^*\pi/8$  with k being an whole number.

Eidson teaches wherein said predetermined angle is  $(2k+1)^*\pi/8$  with k being an whole number (see page 2, paragraphs [0019], [0034-0035] and page 3 [0036-0038]).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Eidson into Fernando et al as to map each 3-tuple into an 8-PSK symbol as taught by Eidson (see page 2 [0034]).

As per claims 5 and 10, Fernando et al teach all the features of the claimed invention except wherein said reference constellation is an 8-PSK constellation, circuitry for expressing axis symbols of the constellation as a function of diagonal symbols in order to assure symmetrical properties for use of the butterfly circuitry.

Eidson teaches wherein said reference constellation is an 8-PSK constellation, circuitry for expressing axis symbols of the constellation as a function of diagonal symbols in order to assure symmetrical properties for use of the butterfly circuitry(see page 2, paragraphs [0019], [0034-0035] and page 3 [0036-0038]).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Eidson into Fernando et al as to map each 3-tuple into an 8-PSK symbol as taught by Eidson (see page 2 [0034]).

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kang U.S. patent No 6,163,581 teaches a low power state.

Worm et al U.S. Patent No 7,116,732 B2 teaches a method and apparatus for decoding a bit sequence.

Bickerstaff U.S. patent No 20020162074 A1 teaches method and apparatus for path metric.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571 272 3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

6/29/2007

Emmanuel Bayard  
Primary Examiner

Art Unit 2611

~~EMMANUEL BAYARD~~  
~~PRIMARY EXAMINER~~